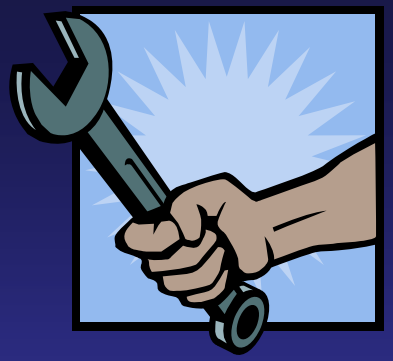
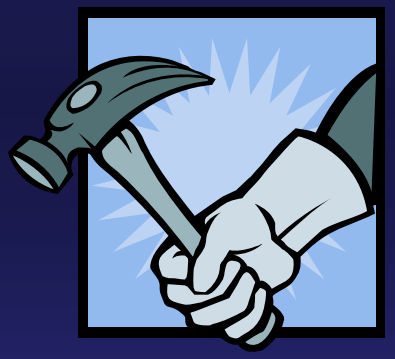
A Formula for Fixing Troubled Projects: The Scientific Method Meets Leadership





Presented by
Sandra Wagner

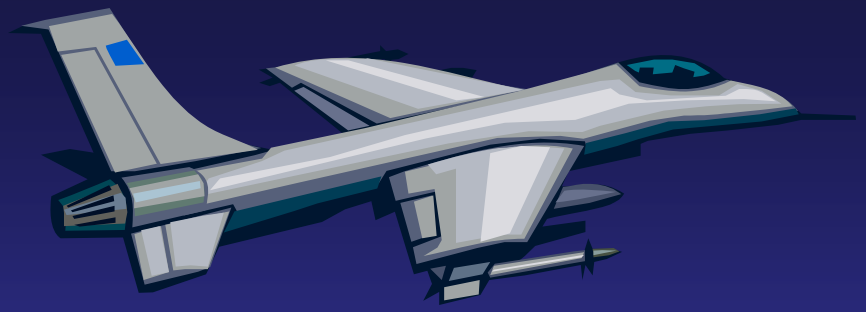
NASA Project Management Challenge
March 21-22, 2006

The Physics Problem

1. Read the Problem
2. Diagram the Problem
3. What is the Question?
4. What Data is Provided?
5. What Mathematical Formula to Use?
6. What Data is Missing?
7. Collect Missing Data
8. Solve the Problem
9. Check Your Work

We Can

Sampling and Analysis Plans for Containerized Mixed-Waste



Autopilot

Computerized Maintenance Management System Software

Example 1

We Can

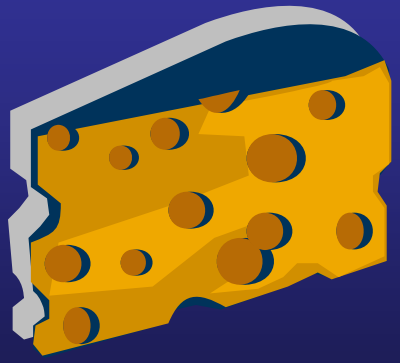
Sampling and Analysis Plans for Containerized Mixed-Waste

We Can

Read the Problem

Observe

- ✓ Plans Behind Schedule and Under Budget
- ✓ Regulatory Non-Compliance Risk
- ✓ First Drum Sampled – Coveralls not Oxide

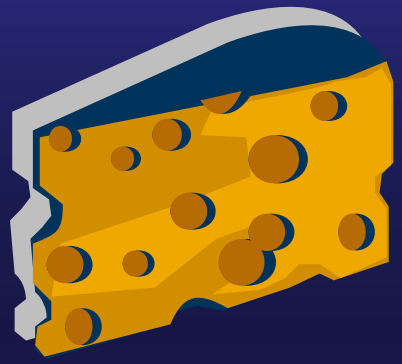


We Can

Diagram the Problem

Explore Paradigms

(Where is Their Cheese?)



- ✓ Previous PM – Analytical Chemistry Techniques
- ✓ Customer – Data for Treating Waste for Disposal
- ✓ Regulators – Regulatory Compliance
- ✓ PM – The Little Engine that Could

We Can

What is the Question?
Define the Objective

Characterize the Waste
To Enable Treatment

We Can

What Data is Provided?
What are the Resources

- ✓ People – Sampling and Analysis Plan Team
- ✓ Annual Budget - $2 Million

We Can

What Mathematical Formula to Use?

The Project Plan Algorithm

- ✓ Review Database
- ✓ Walk Down Drums
- ✓ Perform Head Space Analysis
- ✓ Perform Real-Time Radiography
- ✓ Create Waste Characterization Report
- ✓ Determine Appropriate Sampling Method
- ✓ Develop Sampling Technologies
- ✓ Develop Sampling Techniques
- ✓ Write Sampling and Analysis Plan
- ✓ Develop Sampling Work Instruction
- ✓ Contract Analytical Laboratory
- ✓ Develop Prioritization and Schedule
- ✓ Sample Drums
- ✓ Analyze Samples
- ✓ Update Waste Characterization Report

We Can

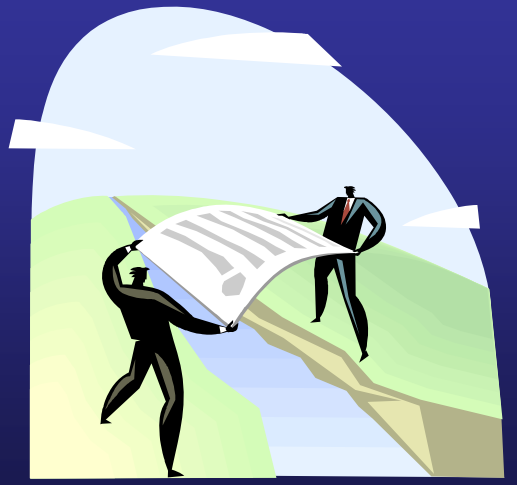
What Data is Missing?
Gap Analysis

- ✓ What is Really in the Drums?
- ✓ How to Sample a Variety of Waste?
- ✓ How to Preserve Sample?
- ✓ Who are the Stakeholders?
- ✓ Who Does the Team Need?

We Can

Collect Missing Data

Fill the Gaps



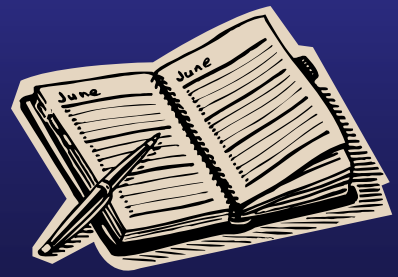
- ✓ Develop Compactor Coring Device
  - Technology Development
- ✓ Develop Sampling Methods
  - Operational Procedures
- ✓ Identify and Include Stakeholders in Planning
  - State of Colorado
  - Environmental Protection Agency
  - Department of Energy
  - Department of Transportation
  - The Public
  - Analytical Laboratories
- ✓ Identify and Include Team Members in Planning

Sampling and Analysis Planning Team	Radiation Monitoring
Technology Developers	Chemists
Operators	Nuclear Safety
Radiation Safety	Toxicology

40 Organizations!

We Can

Solve the Problem
Implement Project



- ✓ Manage Schedule
- ✓ Manage Budget
- ✓ Manage Technical

We Can

Check Your Work

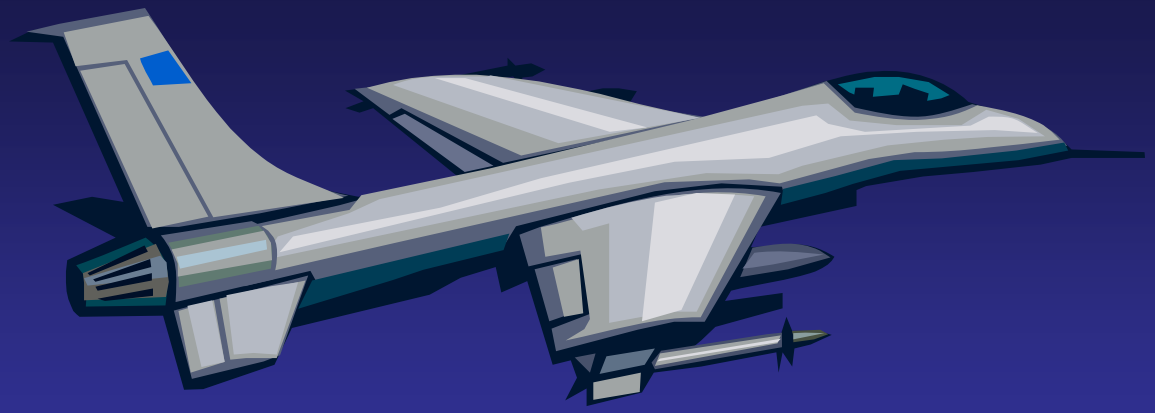
Manage Risk

- ✓ Earned Value Management
  - Schedule Products
  - Resource Load Schedule
  - Measurable Milestones
- ✓ Corrective Action Plans
  - Plan
  - Implement

Example 2

Autopilot

Computerized Maintenance Management System Software

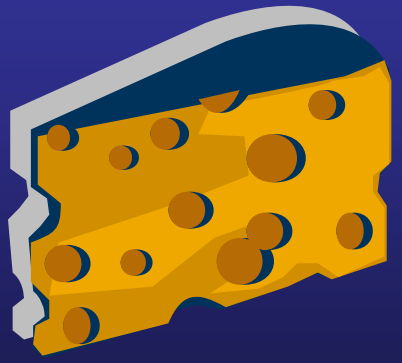


Autopilot

Read the Problem
Observe

- ✓ Programmers Working 90 Hour Weeks
- ✓ Resources 100% to Operational Requests
- ✓ Dissatisfied User Base
- ✓ No Formal Requirements
- ✓ No Change Control
- ✓ Database Inaccurate
- ✓ Inappropriate Maintenance Plans
- ✓ Legacy Processes

Autopilot



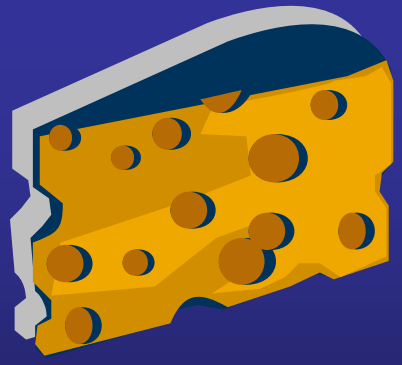
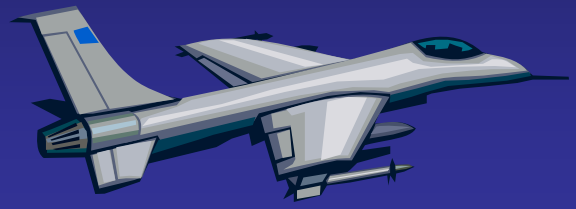


Diagram the Problem
Explore Paradigms
(Where is Their Cheese?)

- ✓ Customer – Move the Cheese
- ✓ Work Control – Don't Change It
- ✓ Technicians – I Like My Work
- ✓ Users – Keep Facilities and Equipment Operational
- ✓ $8 Million Facility Maintenance
- ✓ PM – High Performance Aircraft on Autopilot



Autopilot

What is the Question?

Define the Objective

User Friendly, Reliable and Timely Facility and Equipment Maintenance and Repair

Autopilot

What Data is Provided?
What are the Resources

- ✓ Data – Maintenance Database
- ✓ People – Programmers and Technicians
- ✓ Tools – MAXIMO
- ✓ Annual Budget - $800K

Autopilot

What Data is Missing?
Gap Analysis

- ✓ How to Correct Database?
- ✓ What Skills Are Needed?
- ✓ How to Allocate Resources?
- ✓ Who are the Stakeholders?
- ✓ How to Get the Team On-Board?

Autopilot

Collect Missing Data
Fill the Gaps

- ✓ Acquire Needed Skills
  - Requirements Expert
  - Database Administrator
  - Configuration Manager
  - Reliability Centered Maintenance Expert
- ✓ Allocate Resources
  - Separate Project and Operational Resources
- ✓ Identify and Include Stakeholders in Planning
  - Wind Tunnel Operators
  - Structures Laboratory Personnel
  - Maintenance Technicians
  - Contract Managers
  - Work Control
- ✓ Create Acceptance – Re-Engineering Workshop
  - Find New Cheese
  - Create New Process

Autopilot

What Mathematical Formula to Use?

The Project Plan Algorithm

Project Integrated Reliability for Research

- ✓ Project Infuse – Database
  - Collect Name Plate Data
  - Generate Reliability Centered Maintenance Plans
  - Re-Engineer Careers
- ✓ Project Perimeter Interface – User Interface
  - Develop Requirements
  - Object Oriented Analysis and Design
  - Software Development
- ✓ Strategic Reliability Centered Logistics – Operational Infrastructure
  - "Find New Cheese"
  - Procure Life-Cycle Software Management Tool – Rational Rose
  - Re-engineer Maintenance Delivery System Processes
  - Requirements Management
  - Configuration Management
  - Capability Maturity Model

Final Exam
Integrity

✓ Intuition

”It is in your moments of decision that your destiny is shaped.”

- Anthony Robbins

✓ Courage

”The price of greatness is responsibility.”

- Winston Churchill

✓ Commitment

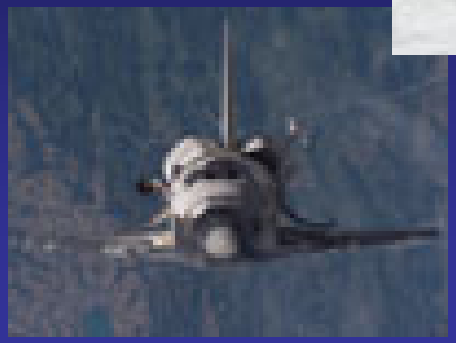
”It’s never crowded along the extra mile.”

- Wayne Dyer

”The supreme quality for leadership is unquestionably integrity. Without it, no real success is possible … ”

- Dwight D. Eisenhower

The Adventure Continues



Thank You